

EIN No: SSDCD8-010 Rev. A Date: December 15, 2023 Originator: Enterprise SSD Product Group 1

Engineering Information Notice (EIN)

PRODUCT AFFECTED

For Generic, Non-SED, U.2 Gen4, KCD8 series

KCD81RUGxxxx Series: 1 DWPD
KCD81RUG960G:SDF1E06GEA
KCD81RUG1T92:SDF1E05GEA
KCD81RUG3T84:SDF1E04GEA
KCD81RUG7T68:SDF1E03GEA
KCD81RUG15T3:SDF1E01GEA

KCD81VUGxxxx Series: 3 DWPD
KCD81VUG800G:SDF1D06GEA
KCD81VUG1T60:SDF1D05GEA
KCD81VUG3T20:SDF1D04GEA
KCD81VUG6T40:SDF1D03GEA
KCD81VUG12T8:SDF1D01GEA

For Generic, SIE, U.2 Gen4, KCD8 series

KCD8XRUGxxxx Series: 1 DWPD
KCD8XRUG960G:SDF1E86GEB
KCD8XRUG1T92:SDF1E85GEB
KCD8XRUG3T84:SDF1E84GEB
KCD8XRUG7T68:SDF1E83GEB
KCD8XRUG15T3:SDF1E81GEB

KCD8XVUGxxxx Series: 3 DWPD
KCD8XVUG800G:SDF1D86GEB
KCD8XVUG1T60:SDF1D85GEB
KCD8XVUG3T20:SDF1D84GEB
KCD8XVUG6T40:SDF1D83GEB
KCD8XVUG12T8:SDF1D81GEB

For Generic, SED, U.2 Gen4, KCD8 series

KCD8DRUGxxxx Series: 1 DWPD
KCD8DRUG960G:SDF1E46GEB
KCD8DRUG1T92:SDF1E45GEB
KCD8DRUG3T84:SDF1E44GEB
KCD8DRUG7T68:SDF1E43GEB
KCD8DRUG15T3:SDF1E41GEB

KCD8DVUGxxxx Series: 3 DWPD
KCD8DVUG800G:SDF1D46GEB
KCD8DVUG1T60:SDF1D45GEB
KCD8DVUG3T20:SDF1D44GEB
KCD8DVUG6T40:SDF1D43GEB
KCD8DVUG12T8:SDF1D41GEB

CLASSIFICATION

- Electrical
- Mechanical
- Others

LEVEL

- Hardware
- Software (firmware)
- Document

- Manufacturing
- Others

IMPLEMENTATION

- Factory
- Customer side
- As required
- Repaired
- Retrofit kit required

PRIORITY

- Urgent
- Immediate
- Routine

REVISION LEVEL**For Generic, Non-SED, U.2 Gen4, KCD8 series**

KCD81RUGxxxx Series: 1 DWPD

KCD81RUG960G:SDF1E06GEA

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD81RUG1T92:SDF1E05GEA

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD81RUG3T84:SDF1E04GEA

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD81RUG7T68:SDF1E03GEA

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD81RUG15T3:SDF1E01GEA

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD81VUGxxxx Series: 3 DWPD

KCD81VUG800G:SDF1D06GEA

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD81VUG1T60:SDF1D05GEA

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD81VUG3T20:SDF1D04GEA

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD81VUG6T40:SDF1D03GEA

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD81VUG12T8:SDF1D01GEA

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

For Generic, SIE, U.2 Gen4, KCD8 series

KCD8XRUGxxxx Series: 1 DWPD

KCD8XRUG960G:SDF1E86GEB

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD8XRUG1T92:SDF1E85GEB

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD8XRUG3T84:SDF1E84GEB

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD8XRUG7T68:SDF1E83GEB

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD8XRUG15T3:SDF1E81GEB

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD8XVUGxxxx Series: 3 DWPD

KCD8XVUG800G:SDF1D86GEB

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD8XVUG1T60:SDF1D85GEB

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD8XVUG3T20:SDF1D84GEB

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD8XVUG6T40:SDF1D83GEB

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD8XVUG12T8:SDF1D81GEB

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

For Generic, SED, U.2 Gen4, KCD8 series

KCD8DRUGxxxx Series: 1 DWPD

KCD8DRUG960G:SDF1E46GEB

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD8DRUG1T92:SDF1E45GEB

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD8DRUG3T84:SDF1E44GEB

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD8DRUG7T68:SDF1E43GEB

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD8DRUG15T3:SDF1E41GEB

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD8DVUGxxxx Series: 3 DWPD

KCD8DVUG800G:SDF1D46GEB

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD8DVUG1T60:SDF1D45GEB

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD8DVUG3T20:SDF1D44GEB

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD8DVUG6T40:SDF1D43GEB

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

KCD8DVUG12T8:SDF1D41GEB

Item	Content	Revised
EC Rev	A2	A3
FW Rev.	0104	0105

DESCRIPTION OF CHANGE

Fixed issues

(1) OWS/NOWS

Issue: According to NVMe (NVM Express® NVM Command Set Specification, Revision 1.0c) and OCP (OCP V2.0 r21) spec, OWS (Optimal Write Size) value must be the same as NOWS (Namespace OWS), and must not be 0. but current CD8 firmware has OWS value is 0 (Transfer Length is set by Host) and NOWS value is 7 (4kB).

Fix: OWS and NOWS are changed to 255 (128kB) in order to meet the specification.

(2) Phy parameter

Issue: SI improvement to cover various systems

Fix : Preset value (one of Phy parameters) was changed to 1 from 4 or 8.

(3) Sanitize

Issue: When Sanitize operation is completed, AER of "Sanitize Operation Completed" is not sent first.

Cause: When Sanitize operation is completed, the drive sends AER (Asynchronous Event Request) of "NS Attribute Changed", followed by the "Sanitize Operation Completed". This is not expected AER order.

Fix: Stop sending the AER of "NS Attribute Changed" at the time of Sanitize Operation completion.

(4) Sanitize Format NVM

Issue: When Sanitize CMD and/or Format CMD is completed, the AER (Asynchronous Event Request) notification of "Namespace Attribute Changed" is generated for all of the controllers.

Cause: There is no process to determine attached NS before reporting AER notification of "Namespace Attribute Changed".

Fix: When the AER notification of "Namespace Attribute Changed" is generated, the drive reports this AER only for the namespace attached controller.

(5) Asynchronous Event Request

Issue: Asynchronous Format Command caused timeout for Broadcast NSID when no namespace is present.

Cause: Overwriting of internal error code results in destroying of admin task and timeout in sending completion queue entry.

Fix: FW fixed to avoid overwriting of error code in the task and modified the NVMe status returned to the user for the error code generated where there are non namespaces in the NVM subsystem.

(6) SMBUS

Issue: When transferring large data using SMBus with MTU set to a value larger than 248 bytes (249, 250), the command is discarded after the 256th byte has been transferred without completing the transfer.

Cause: When MTU is 249 or 250 bytes, the size of data to be transferred is 257 or 258 bytes including headers and PEC. On the other hand, since only 256 bytes are available in the TX_FIFO, the data that cannot be fully loaded is discarded. As a result, STOP information cannot be sent, and an unexcited timeout interrupt occurs, interrupting the command processing.

Fix: To prevent the size of data to be sent from exceeding the size of TX_FIFO, the maximum value of MTU was changed to 248 bytes, and when switching to a new FW with MTU=249 or 250, the value is updated to MTU=248.

(7) Identify Command

Issue: It responds normally to IDENTIFY (CNS=04h, 13h, 16h, 17h) command with NSID.

Cause: NSID argument is ignored when a command was issued that did not use NSID.

Fix: Fixed to respond Invalid field in Command.

(8) Command Response

Issue: When an NVM command is issued during Format execution, the DNR reported value may be 1.

Cause: In Format in Progress, there was an omission of action that should have been reported with DNR=0.

Fix: Fix so that DNR is always 0 when Format in Progress is reported.

(9) Option ROM

Issue: OptionROM may be malfunction if a customer application detects asynchronous API support and attempts to perform asynchronous processing.

Cause: Host was using OptionROM's API (NVMe Pass Thru protocol) to send that command to the drive when Buffer Address would result in a PRP Offset Error, requiring an error response in the API.

Fix: Make the API can respond an error.

Function

(1) Command Response

Read command response is changed to "Internal Device Error(00h/06h)" from "kSCCodeOCPCmdLostTransTbl(02h/C0h)" during failure mode.

(2) Log Identifier C5h

Add OCP FF8629-3 in Unsupported Requirements (Log Identifier C5h)

DATE OF APPLICATION

This change is applied to the factory line from March, 2024.

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